Essential and Fixed Oils of Kansas Plants

by Earl J. Wellington

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The following report deals with those Kansas plants (one or two trees included) which are known to yield or are suspected of yielding essential and fixed oils. No cultivated plants have been considered. Bernard B. Smyth's "Check List of the Plants of Kansas", published in Topeka, 1892, was used. This is the most complete catalog of Kansas plants available at the present time. The numbers to the left of the botanical names refer to those of this check list. A new flora of the state has been in preparation for several years since the publication of the list mentioned above, but it is still unfinished.

Wherever possible the analyses of the contained oil is given or else references where that information may be found. In many cases the analysis of the plant merely mentioned the presence or even suspected presence of an oil.

ABBREVIATIONS.

A. J. P. ---------- American Journal of Pharmacy.

Berichte von S.& Co. Berichte von Schimmel and Co.

G.& H.---------- Gildemeister and Hoffman's Volatil Oils, translated by Professor Edward Kremers of the University of Wisconsin.

J. C. S.---------- Journal of the Chemical Society of London.

Ph. Ztg.---------- Pharmaceutische Zeitung.

P.---------- Piesse's Art of Perfumery, 5th Ed, 1891.

Proc. A. Ph.------- Proceedings of the American Pharmaceutical Association.

U. S. D.---------- Dispensatory of the United States, 19th Ed.

15. Delphinium consolida L.

Larkspur.

Thomas C. Hopkins of Baltimore found in the seeds a volatil and a fixed oil.

U. S. D. 1472.

21. Nigella damascena L.

Seeds yield .5% of a volatil oil having a beautiful blue fluorescence, agreeable odor and taste of wild strawberry.

Sp. G. .895 to 906

A_d - 1° 4'

Imperfectly insoluble in 90% alcohol.

Immiscible in absolute alcohol.

Gildemeister and Hoffman, 352.
Berichte von S. & Co. Oct. 1894, 55.
Pharm. Centralblatt, 31 pp. 173 and 191.
also inaug. Dissertation of the same author
Erlangen, 1890.

22-31 Ranunculus

Crowfoot, Buttercup.

Abortivus L.; R. Aquatilis, var caespitosus D.C. var. trichophyllus Chaix, R. cymbalaria Pursh; R. fascicularis Muhlenberg; R. multifidus Pursh; var. terrestris Gr.: R. Pusillus poiret; P. recurvatus Poiret. R. repens L.

Most plants belonging to this genus have similar acrid properties due to volatil oils.

U. S. D. 1628.

35. Asimma triloba Danual.

Common Pawpaw.

Contains a volatil oil.

also about 3.53% fixed oil.

U. S. D. 1401.
J. U. and C. G. Lloyd, A. J. P. 1886.
J. M. Fletcher, A. J. P. 1891, 476.

50. Brassica alba Gray.

White Mustard.

Contains no volatil oil.

See. U. S. D. 1124, note (1).

52 Brassica nigra Koch.

Black Mustard.

Contains oil of Black Mustard.

Colorless or pale yellow.

Limpid, strongly refractive.

Has very pungent acrid odor.

Sp. G. 1.013 to 1.020 at 25°C.

Miscible with Alcohol all proportions.

B. P. 148° to 152°C.

Activity of oil due to Allyl Isothiocyanate $CSNC_3H_5$

U.S.D. 1124 and 876.
G. & H. 409 to 417.

57. Capsella bursa-pastories Moench.

Yields oil identical with oil of black mustard.

U. S. D. 1430.
A. J. P. 1888.
Provincial Med. Jour. 1858.

66. Lepidium ruderale L.

L. ruderale also L. campestre R. Gr. and L. sativum contain an oil heavier than water and containing sulfur.

(1) 3/4 - $C_6H_5.CH_2.CN$ Benzyl cyanide.

(2) Lower - $C_6H_5CH_2.N:CS$ and small amounts of (1).

For analysis see G.& H. 406.

75. Nasturtium officinale R.Br.

Water cress.

Contains a volatil oil $C_9H_{10}N$

U. S. D. 1577.

According to A. W. Hoffman oil of Water Cress contains principally

a nitrile of phenyl-propionic acid
$C_6H_5.CH_2CH_2.CN$ B.P. 253°C.

Moreigne found raphanol in this oil.

See G.& H. 417.
also G.& H. 452 for oil from garden Nast.

76. Nasturtium palustre D. C.

Acts similarly and probably also contains a volatil oil.

U. S. D. 1577.

80. Raptanus sativus L.

Yields small amount of a colorless sulphuraceous oil heavier than water, tasting but not smelling like odor of radish.

G.& H. 417.

95. Helianthemum canadense Mx.

Frostweed or Rockrose.

Contains small amount of volatil oil.

Contains a fatty oil.

Wm. Crutcher A. J. P. 1888, 390.

Petroleum Benzin extracts 1.15% containing a little volatil oil.

U. S. D. 1513.

110. Viola tricolor L.

v. tenella Vasey.

"Hearts ease" when bruised smells like peach kernels and doubtless, therefore, contains HCN.

Flowers of V. tricolor are modorous but the plant evidently contains the same sweet principle as in other species of the Viola.

P. 231.

145. Hypericum perforatum L.

Contains volatil oil.

U. S. B. 1520.

162. Tilia americana L.

Linden tree.

Flowers yield .038% oil of Linden.

Oil is colorless, very fluid, quite volatil, possesses odor of fresh flowers in high degree.

Soluble in all proportions in Ether and Alcohol.

G.& H. 501.
Pharmaceut. Centralblatt, 1837, p. 781.

166. Linum usitatissimum L.

Seed yields according to Berjot (J. P. Cavril 1863, 277) 34% fixed oil of Flax seed.

U. S. D. 852.

177. Ailanthus glandulosa Desf.

Chinese Sumack.

Contains traces of a volatil oil.

U. S. D. 1372.

199. Celastrus scandens L.

False Bitter Sweet

Contains a volatil oil.

C. H. Bernhard found in bark a volatil oil of rather agreeable odor. A. J. P. 1882, 1.

U. S. D. 1438.

200. Euonymus Americanus L.

201. Euonymus atropurpurens Jacq.

(Wahoo)

Seeds yield an oil on expression.

W. P. Clothier found bark to yield no volatil oil on dist.

Frank V. Cassaday, A. J. P. 1889, 284, found .06% of a volatil oil.

U. S. D. 456.
Miller A. J. P. Sept, 1878.

203. Ceonthus Americanus L.

Red Root.

8# of dry leaves yielded 10 grains light yellow volatil oil, strong aromatic odor, acid reaction.

See J. H. M. Clinch, A. J. P. 1884.

U. S. D. 1438.

228. Lindera benzoin Blume.

A. W. Miller obtained by warming and expression from berries and distilling, 2% volatil oil. Sp. G. .850, thin, bright green, warm aromatic taste.

J. M. Jones. Pros. A. Ph. XXVi, 772, also A. J. P. XLV 300; XLV11 246 found the oil to be of the cinnamyl series.

U. S. D. 1411.

240. Polygala senaga.

Snake Root.

According to L. Renter root yields .25% to .33% of volatil oil consisting of a mixture of methyl salicylate and an ester of valerianic acid.

Also found in P. albiflora.

L. Renter also found a fixed oil.

See G.& H. 494.

Arc. Der Pharm. 1889, 309, 452.

" " " 227, p. 313.

U. S. D. 1108.

251. Gymnocladus canadensis Lam.

Coffee Bean Tree.

Extract of Beans is toxic and contains 10% of a fixed, yellow, saponifiable oil, Sp. G. .919.

See Sam'l. S. Mell A. J. P. 1887, 230.

According to James H. Martin A. J. P. 1892, 558.

Sp. G. from seeds is .913.

Also obtained the oil from bark.

Easily saponifiable with strong bases.

Slightly soluble in absolute alcohol.

Readily soluble in Petroleum ether and ether.

Presence of Saponin strongly indicated in alcoholic extract.

Oil from bark almost insoluble in absolute alcohol. Soluble in ether, chloroform, benzol and glacial acetic. No indication of an alkaloid.

U. S. D. 1512.

326. Melilotus alba.

White Sweet Clover.

Has similar properties with the yellow variety.

U. S. D. 1562.

327. Melilotus officinalis L (Wild)

Yellow Sweet Clover.

Contains Coumarine combined with melilotic acid and coumaric acid.

U. S. D. 1562.

344. Psoralea melilotoides Mx.

Root according to Mac Nair contains 2% volatil oil, Sp. G. .93, pungent bitter taste, neutral reaction.

A. J. P., 1889, 350.

U. S. D. 1622.

368. Agrimonia Eupatoria L.

Contains a volatil oil.

U. S. D. 1372.

417. Spiraea tomentosa L.

Many if not all of the species contain a colorless volatil oil similar to oil of Gaultheria but composed mainly of salicylic aldehydes with only smaller amounts of methyl salicylate.

U. S. D. 1660.

496. Cicuta maculata L.

Poisonous Water Hemlock.

Fruit gives 3.8 to 4.8% volatil oil, nearly colorless, smelling like chenopodium anthelminticum, Sp. G. 855, B. P. 177°C. It consists principally of terpenes.

Soluble in 1-1/2 parts commercial alcohol, in all proportions in absolute alcohol, and in 50 parts in Glacial acetic.

Geenk A. J. P. 63, 330.

Fruit also gives a fatty oil, semi solid, non drying, Sp. G. .946, soluble in all proportions with absolute alcohol, ether, chloroform and carbon-disulfid and in 100 parts acetic ester. Insoluble in Glacial acetic.

Geenk, A. J. P. 63, p. 330.

1# Seeds gave 7% of a colorless, very limpid volatil oil, insipid taste, odor very analogous to chenopodium anthelinnticum Sp. G. .853 B.P. 360°F. Insoluble in alcohol, ether and chloroform. Neutral to Litmus.

Stroup, A. J. P., 1896, 236 from A.J.P., 1855.

Oil thoroughly described by Jas. E. Young, A. M. J. 1855, july.

G.& H. 550.

512. Osmorrhiza longestyles D. C.

Sweet Cicily.

Contains Oil of Anise.

U. S. D. 834.

Eberhardt, Ph. Rund . July, 1887, 5, 149.

About .63% volatil oil, Sp. G. 1.01 10°C

Solid at 10°-12°C. liquid again at 16°C.

Consists practically of anethol.

Part undetermined.

G.& H. 583.

519. Sanicula marylandica L.

Black Snakeroot.

Root according to C. J. Houck, A.J.P., 1884, 463, contains a volatil oil and a resin.

U. S. D. 1641.

536. Sambucus canadensis.L.

Elder.

Flowers yield small amount of volatil oil, containing an appreciable portion of ammonia. Oil is a yellowish solid,consistence of butter, odor slight, bitter taste, lighter than water, and somewhat soluble.

Bark also yields a volatil oil.

C. G. Traub, A. J. P., 1881, 392.

F. F. Lyons, A. J. P., 1892.

Lyons obtained about .5% oil from bark.

According to W. J. Bush & Co., Chemist & Druggist, 1897, 53, oil from flowers, Sp. G. .827. Solid at ordinary temp. like Oil of Rose.

U. S. D. 1080.

571. Eupatorium perfoliatum L.

Thoroughwort or boneset.

Bickley found signs of volatil oil.

A. J. P., 1851, 206.
A. J. P., 1854, 459.
A. J. P., 1879, 342.
U. S. D., 458.

641. Erigeron canadensis L.

Fleabane, Horseweed, Bitterweed.

Herb yields .2 -.4% well known Oil of Fleabane or Erigeron.

Limpid, straw color, peculiar aromatic persistant odor, and characteristic taste, neutral reaction, Sp. G. .850 increasing with age, soluble in equal volume of alcohol.

Oil consists chiefly of dextro limonene with some terpineol. A. J. P., 1893, 420.

U. S. D. 844.
G.& H. 668.

645. Erigeron philadelphicus L.

F. L. John obtained a volatil oil about 1/2 drachm from 45# of herbs.

Yel. Gr. color, powerful penetrating aromatic odor, bitterish pungent, disagreeable taste.

Sp. G. .946

U. S. D., 844 and 1479.

648. Grindelia robusta Nuttall.

(Grindelia squarrosa Dun var robusta.)

Said to contain .28% volatil oil, dark brown, Sp. G. .958 at 15°C. Opt. rot, alcohol solution -8° 8'.

U. S. D., 600.

Ph. Ztg., 48, 574.

C. J. Rademaker, New Remedies, 1876, 205, obtained a volatil oil, having odor resembling turpentine.

U. S. D. 600.

656. Solidago canadensis L.

Golden Rod.

Yields .63% Oil of Golden Rod.

Light yellow, sweetly aromatic. Sp. G. .859,

- -11° 10'.

Several others of this genus yield oils.

Oil contains about 85% Terpenes, especially pinene, some phellandrene and dipentine, possibly limonene.

Higher boiling parts consist of

borneol (total 9.2%)

" acetate 3.4%

and cadinene

G.& H. 668.

Bericht von S. & Co., Apr. 1894, 57.

683. Inula helenium L.

Root yields 1. to 2.% of a solid, permeated by some liquid oil, Oil of Elacampane.

Consists almost entirely of alantolactone mixed with some alantolic acids, alantol and a substance $(C_6H_8O)_x$, the helenin of Kallen.

G.& H. 670.
Liebigs Annalen, 1895, 285, p. 349.
Berichte, 6, p. 1506.

684. Achillea millefolia L.

Fresh flowers yield .07 to .13% Oil of Milfoil, dark blue, strongly aromatic camphor-like odor, Sp. G. .905-.925.

Only known constituant, cineol.

Bley, Trommsdorf, N. Jour. d. Pharm. XVI (11) 1828, 96.

Schimmel & Co. Berichte, Oct. 1894, 55.

Weppen a. Luders, Ztschr. d. Deutsch. Apoth. Ver., 1884, 117.

Roots yield .032% almost colorless oil, unpleasant taste, peculiar fainly valerian-like odor. Acetic acid found in distillate, also traces of volatil sulfur compounds.

Bleg Trommsdorf. N. Jour. d. Pharm. 1828, 16 I, 247.

G.& H. 675.

690. Ambrosia artemisiafolia L.

Ragweed, Hogweed, Bitterweed, Roman wormwood.

Fresh flowering herb yields .07% of a dark green Oil of Ambrosia artemisiaefolia, aromatic, not unpleasant odor.

Sp. G. .870. A_d - -26°

G.& H., 672.
Berichte von S.& Co., Oct. 1894, 73.
Schimmel & Co., Report 1904, 96.
U. S. D., 1379.

694. Anthemis cotula L.

Mayweed.

Fresh flowers yield .013% Oil of Anthemis cotula. Entire plant gave .01% reddish oil, acid reaction, bitter taste, Sp. G. 858 at 26°C.

For analysis see A. J. P., 57, 376.

G.& H., 674.
U. S. D., 146.

695. Artemesia absinthium L.

Fresh herb cultivated in Germany, yields 1/2% Oil of Wormwood.

Composition:

(1) Absynthol $C_{10}H_{16}O$ Thujone.
High boiling fraction identical to one in oil of Chamomile.

(2) Thujyl alcohol $C_{10}H_{18}O$ free and combined with acetic, isoralerianic, and palmitic acids.

(3) Phellandrene, possibly pinene.

(4) Cardinene.

(5) Blue oil composition made

Other Artemesia contain this Oil.

G.& H. 684.

Compt. rend. 21.379: Ann. de. Chem. et Phys., 111., 16, 333: Chem. Centralbl. 1846, 62;: Compt. rend., 25, 725. Liebig's Annalen, 128, 110: Jour. Chem. Soc. 17.1: Jahrest. of Chem., 1863, 549: Liebig's Annalen, 170, 290. Berichte, 25, 3350; Compave also ibid, 27, 895 and Bericht von S.& Co. Oct. 1892, 51; and Wallach, Liebig's Annalen, 286, 93; Berichte von S.& Co., Apr. 1897, 51.

734. Erechtites hieracefolia Raf.

One of the plants infesting peppermint fields. Yields Oil of Fireweed.

Sp. G. .845 - .855. Todd, A. J. P., 59, 312.

" " .838 at 18.5°. Berichte, 15, p. 2854.

Dar L. -2' to + 2°.

Composed of a terpene B.P. 172°, Sp. G. 838 at 18.5°C. Fracton at 240°-310°. $C_{10}H_{16}$.

Beilstein & Wiegand.

G.& H., 687.

744. Helenium autumnale L.

False Sunflower, Sneezewort.

F. J. Koch, A. J. P., 1874, 221 found a volatil oil.

U. S. D., 1513.

745. Helenium nudeflorum Nutt.

Has similar properties to H. autumnale L. and possibly contains a volatil oil.

U. S. D. 1513.

746. Helianthus annus L.

Common Sunflower.

Seed yields fixed oil.

Sp. G. .924 to .926.

Solid at -15°C.

Colorless or yellow.

Limpid, nearly tasteless,

Odorless and dries slowly.

U. S. D., 1514.

Weisner, Die Rohstoffe des Pflanzenriche,

I 521 and II 867

800. Tanacetum vulgare L.

(Chrysanthemum tanacetum Karsh)

Tansy.

Fresh flowers yield .1 to .2% Oil of Tansy.

Dry herb yields .2 to .3% Oil of Tansy.

Color yellow, changing to brown by light & air.

Sp. G. from fresh herb .925 to 940.

Sp. G. from dry herb .955

A_d + 30° to + 45°

Bulk of oil consists of Thujone or Tanaestone to which oil owes odor.

G.& H., 679.

Leaves also contain the Oil.

U. S. D., 1666.

809. Arctium lappa L.

Burdock.

Thss. Donaldson, A. J. P., 1890, 123 obtained by extracting with petroleum benzine 8.6% of a light yellow fixed oil.

U. S. D. 689.

Root yields also .065% volatil oil.

Haensel's Report, Oct. 1902.

850. Lobelia inflata L.

Procter found the plant to contain an odorless volatil principle probably an oil. He found also a fixed oil.

Seeds contain 30% of a nearly colorless fixed oil, having the drying properties in an extremely high degree.

U. S. D., 747.
A. J. P. 1X, 105, X111 1, and 1872 293.

860. Anagallis arvensis L. (F)

J. A. Herntzelman obtained a volatil oil Sp. G. .987, strong peculiar odor, pungent somewhat acrid taste.

Oil has very powerful physiological action. Four drops (.2 Cc.) produced intense headache and nausea lasting 24 hours with pains throughout the body.

U. S. D. 1384.

998. Collinsonia canadensis L.

C. W. Lochman, A. J. P., 1885, 228, found a volatil oil in glands on under surface of leaves.

About the time the fruit is ripe especially if plant is so situated as to be in direct sunlight the calices have an odor similar to that of caraway. Was not certain if this was due to a volatil oil or not.

16# of leaves from plant in full bloom yielded on distillation one drachm of a very light yellow volatil oil having a very pleasant lemon-like odor. The volatil oil is all dissipated on drying the leaves after several months.

U. S. D., 1454.

1001. Hedeoma pulegone Persoon.

Yields Oil of Pennyroyal.

1 ton fresh herb yields 10# to 12# of oil.

Dry leaves yield 3.% of oil.

Dry stems yield 1.3% of oil.

Light yellow liquid of characteristic minty and sweetish odor, aromatic taste. Sp. G. .925 - 940. A_d - + 18 to + 22°. Soluble in two or more parts 70% alcohol.

Principal constituant

Proc. Wis. Pharm. Assoc., 1893, 51.
A. J. P., 65, 417.
Pharm. Jour. Ill., 17, 672.
Proc. Am. Pharm. Ass'n., 35, 546.
J. F. Patton, Proc. Penn. Pharm. Ass'n. 1890
" Am. " " 39, 548.

Kremers found two Ketones

(1) $C_{10}H_{18}O$ B.P. 168°-171°C.
(2) " " 206°-209°.

Pharm. Rundschau 9, 130
Proc. Am. Phar. Ass'n., 35, 546.
A. J. P., 59, 535.

The American oil is analagous to European oil but obtained from a distinct plant.

U. S. D., 849.

1003. Leonurus cardiaca L.

An "Aromatic" perennial and possibly contains an essential oil.

U. S. D., 1548.

1010. Lycopus vefginicus L. (michx)

American Bugle Weed.

Yields Oil of Bugleweed.

Has characteristic but difficultly definable odor. Sp. G. .924 at 15°.

G.& H., 629.
Berichte von S. & Co., Oct. 1890, 49.

1011. Marrubium vulgare L.

Yields a volatil oil.

U. S. D., 766.

1012. Mentha candensis L.

Yields Oil of Wild Mint.

Odor similar to pennyroyal.

Considerable space is devoted to this and the following oil in G.& H. 629 to 658.

1014. Mentha viridis L.

Yields the American spearmint oil, also peppermint.

See G.& H., 629 to 658.

1015 Monarda punctata L.

Horsemint.

Yields 3% Oil of Monarda punctata.

Yellowish to brownish color, pungent, thyme-like and minty odor.

Sp. G. .930-940, slightly dextrorotary.

On standing Thymol crystallizes out in large crystals or crusts.

Oil consists of 61% Thymol according to Schumann and Kremers, Pharm. Review, 14, p. 223.

Also contains a non phenol portion containing cymene, one fraction linalool, and one possibly containing carvacrol.

U. S. D., 1571. G.& H., 615.

Liebigs Annalen, 58, p. 41; Bericht von S & Co., Oct, 1885, p. 20; Amer. J. Pharm., 60 p. 113. Pharm. Archives 2, p. 73.

1018. Monarda fistulosa L.

Wild Bergamot.

Gives an oil similar to Monarda punctata.

Phenol in this is Carvacrol.

Contains also Thymol, Cymena, D-limonene and small quantities of Thymo quinone and Thymoquinol.

The dark color of the oil and the dark color produced in both the phenolic and non phenolic portion on keeping are probably due to the production of the highly colored Thymoquinhydrone.

G.& H., 615.
Pharm. Rundschan, 13 p, 207.
" Review, 14, p. 198.
" Archives, 2 p. 76.
Jour. Chem. Soc., Vol. 80 I pg 598.

1020 Nepeta cataria L.

Yields Oil of Catnip.

Unpleasant mint and camphor like odor.

Sp. G. 1.041.

G.& H. 612.

Bericht von I.& Co., Oct. 1891, p. 40.

1021. Nepeta glechoma Benth.

(Glechoma hederacea L.)

Ground Ivy.

Dried herb yields 3% Oil of Ground Ivy.

Difficulty definable not pleasant odor of dark color. Sp. G. .925.

G.& H. 612.
Bericht von I & Co., Apr. 1894, p. 55.

1023. Pycnanthemum lanceolatum Pursh.

Herb yiedls oil of Pycnanthemum l.

Scarcely distinguishable from American Oil of pennyroyal.

For Comp. see G.& H. 661.

Pharm. Review 14, p. 32 and 16, p. 414.

Sp. G. .918-.936 at 15°C, .914-935 at 20°C

(1) A. J. P. 66, p. 65.

)2) Pharm. Review 14, p. 32.

A_d - .566° to + 11.083°

Pharm. Review 16, p. 414

1026. Salvia.
Sage.

A powerful otto can be obtained by distilling from any of the Salvia. Dried sage leaves ground compound well for sachets.

Piesse's Art of Perfumery p. 208.

Seeds also contain oil.

Muir J. Chem. Soc. 37, p. 678, found

A Terpene, B.P. 156°.

" " " 171°

THUJONE " 197 to 203 $C_{10}H_{16}O$

and ordinary camphor

Thujone in the oil increases on standing then the camphor.

U. S. D., 1641.

1101 Verbascum thapsus L.

Yields an oil to olive oil by saturating it with flowers.

U. S. D., 1690.

1108. Veronica verginica L.

According to E. S. Wayne of Cincinnati it contains a volatil oil.

U. S. D. 1691.

1109. Catalpa bignonioides Walt.

Catalpa Tree.

F. K. Brown obtained from the seeds a fixed oil.

A. J. P., 1887, 230.

U. S. D., 1435.

1131. Asarum canadense L.

Roots yield a very fragrant volatil oil used in perfumery. 3.5 to 4.5%

Yellowish to yellowish brown color, a strong but pleasant aromatic odor. Sp. G. .93 to .96. Soluble in 2 parts 70% alcohol.

Constituents given by Power, Proc. Am. Pharm. Assoc., 1880, 28, p. 464, as follows:

(1) Unknown terpene $C_{10}H_{16}$ possibly identical with Pinene, B.P. 163°to 166°C.

(2) Asarol alcohol $C_{10}H_{18}O$. Odor reminds one of coriander. Appears to be identical with linalool. B.P. 196 to 199°C. Sp. G. .874 at 17°C.

(3) Alcahol $C_{10}H_{18}O$, Isomeric with (2). Odor resembles geranium oil B.P. 222°-226°C.

(4) Methyl Eugenol $C_{11}H_{24}O_2$ B.P. 254°-257°C.

(5) Fraction of indefinite composition, blue color, B.P. 275-350°C.

U. S. D. 1400
G.& H. 347
Power and Lees, Trans. Chem. Soc. 1902.

1156. Chenopodum ambrosiodes L.

var. anthelminticum Gr.

Entire plant yields oil of wormseed.

Fruit yields .6-1.%

Leaves yield .35%

Colorless to yellowish, odor very penetrating, offensive camphor-like, taste bitter and burning.

Sp. G. .97 Rotatory power -5° to -6°.

Dissolves to clear solution in 70% alcohol.

G.& H., 349.

1257. Stillingia sylvatica L.

Roots yield 3.25% of a volatil oil.

Light yellow, lighter than water, very strong disagreeable odor.

G.& H., 496.
A. J. P., 57, p. 531.

1262. Cannabis sativa.

Indian Hemp.

Seeds yield 20% fixed oil having the drying property. Used in the arts. Possibly contains a volatil oil.

A. C. S. Abstract Jour. 1907, p. gl166.

U. S. D., 280.

Pharm. Past 40 49-51 69-70 97-98.

1264. Humulus lupulus L.

Hops.

Fruit yields .3 to 1.% Oil of Hops.

Aqueous distillate contains valerianic acid perhpas some Butyric acid.

Oil consists principally of one-third sesquiterpene and about two-thirds humulene, also small amounts of olefinic terpenes.

Oil distilled from fresh stroibles has greenish color but that from old hops is reddish brown. Oil is devoid of rotatory power and is neutral to litmus, has an aromatic odor, taste not bitter.

Sp. G. .855-.880° A_d + 0° 28' to 0° 40'.

Difficultly soluble in alcohol. For analysis see G.& H. 336, and Jour. Chem. Soc. 67, p. 54 and 780.

U. S. D., 616.

1317. Acorus calamus.

Sweet Flag.

Dried unpeeled rhizome yields 1.5 to 3.5% Oil of Calamus.

Fresh root only .8%

Piesse, Art of Perfumery, p. 123 gives yield as 1# per 100# root.

Fresh green parts yield an oil closely resembling that from rhizome.

Kurbaton, Liebig's Annalen, 1874, p73 p. 4 gives composition as 5% of a terpene $C_{10}H_{16}$ B.P. 158°-159°

Gives a solid derivative with dry HCl, melting at 63°, possibly a pinene hydrochloride, 2.5% of a fraction B.P. 255°-8°C, Sp. G. 932 at 14°C., contains a sesqui terpene, also fraction at high temperatures.

Oil is used for scenting grease, soaps and for extracts but requires other sweet oils with it to hide its origin: also used in the manufacture of liquors and snuff and in medicine though less than formerly.

G.& H., 301.

1349. Alisma plantago L.

Water Plantain.

Contains a pungent volatil oil.

U. S. D., 1374.

1359 Cypripedium parviflorum Salisbury

Lady's Slipper.

Probably contains a volatil oil.

U. S. D., 419.

1381 Allium canadense Kalm.

1382 Allium cernuum Roth

1383 Allium mutabile Mx.

1384 Allium muttallii Watson.

1385 Allium reticulatum Fraser.

1386 Allium stellatum Nutt.

1387 Allium striatum Jacq.

Garlic, Onions, etc.

Many perhaps all of the species of this genus contain volatil oils upon which their activity depends.

U. S. D., 1375.

1390. Asparagus officinalis L.

Asparagus

W. W. Peters found in seeds a fixed oil quickly drying, and of a reddish yellow color.

Sp. G. .928 at 15°.

Zeis refractometer gives 75° at 25°C.

Oil consists of glycerides of palmitic stearic, oleic, linoleic, linolenic and isolinalenic acids.

U. S. D., 1401.

1407. Trillium erectum L.

Birthroot, Beth root, Wake Robin.

Said to contain a volatil pil. U. S. D. 1683.

W. I. Reid found a small quantity of a fixed oil.

A. J. P., 1892, 67.

1766. Equisetum hyemale L.

Horsetail, Scouring Rust.

F. J. Young A. J. P., 1886, 419.

1.4% of a fixed oil yielded to petroleum benzine.

Brownish green, semi-fluid, readily saponified, soluble in ether chloroform and carbon disulfid.

U. S. D., 1478.

1772. Lycopodium clavatum L.

Fluckiger obtained 47% of a bland fixed oil, bright yellow. Sp. G. .925.

Does not congeal even at -15°C.

A Barkowski obtained 48.5% of a neutral non-drying fixed oil very similar to almnnd oil.

Oil contains 2% of a fatty acid, called Lycopodic acid $C_{18}H_{36}O_4$, 80% oleic, minute quantity of a vegetable cholesterin. 8.2% Glycerin, 3% of arachidic, palmitic and stearic acids.

U. S. D., 750.

B.

C.

D.

F.

G.

H.

I.

K

L.

S.

I.

V.

W.

Y.